

## SEQUENCE LISTING

<110> AXXAM SRL

<120> photoproteins with enhanced bioluminescence and assays using the same

<130> 1009PCT

<160> 22

<170> PatentIn version 3.1

<210> 1

<211> 198

<212> PRT

<213> Clytia gregaria

<400> 1

Met Ala Asp Thr Ala Ser Lys Tyr Ala Val Lys Leu Arg Pro Asn Phe  
1 5 10 15

Asp Asn Pro Lys Trp Val Asn Arg His Lys Phe Met Phe Asn Phe Leu  
20 25 30

Asp Ile Asn Gly Asp Gly Lys Ile Thr Leu Asp Glu Ile Val Ser Lys  
35 40 45

Ala Ser Asp Asp Ile Cys Ala Lys Leu Gly Ala Thr Pro Glu Gln Thr  
50 55 60

Lys Arg His Gln Asp Ala Val Glu Ala Phe Phe Lys Lys Ile Gly Met  
65 70 75 80

Asp Tyr Gly Lys Glu Val Glu Phe Pro Ala Phe Val Asp Gly Trp Lys  
85 90 95

Glu Leu Ala Asn Tyr Asp Leu Lys Leu Trp Ser Gln Asn Lys Lys Ser  
100 105 110

Leu Ile Arg Asp Trp Gly Glu Ala Val Phe Asp Ile Phe Asp Lys Asp  
115 120 125

Gly Ser Gly Ser Ile Ser Leu Asp Glu Trp Lys Ala Tyr Gly Arg Ile  
130 135 140

Ser Gly Ile Cys Ser Ser Asp Glu Asp Ala Glu Lys Thr Phe Lys His  
145 150 155 160

Cys Asp Leu Asp Asn Ser Gly Lys Leu Asp Val Asp Glu Met Thr Arg  
165 170 175

Gln His Leu Gly Phe Trp Tyr Thr Leu Asp Pro Asn Ala Asp Gly Leu  
180 185 190

Tyr Gly Asn Phe Val Pro  
195

<210> 2

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<212> PRT

<213> Unknown

<220>

<223> Clytin mutant: mutClyK1

<400> 2

Met Ala Asp Thr Ala Ser Lys Tyr Ala Val Lys Leu Arg Pro Asn Phe  
1 5 10 15

Asp Asn Pro Lys Trp Val Asn Arg His Lys Phe Met Phe Asn Phe Leu  
20 25 30

Asp Ile Asn Gly Asp Gly Lys Ile Thr Leu Asp Glu Ile Val Ser Lys  
35 40 45

Ala Ser Asp Asp Ile Ser Ala Lys Leu Gly Ala Thr Pro Glu Gln Thr  
50 55 60

Lys Arg His Gln Asp Ala Val Glu Ala Phe Phe Lys Lys Ile Gly Met  
65 70 75 80

Asp Tyr Gly Lys Glu Val Glu Phe Pro Ala Phe Val Asp Gly Trp Lys  
85 90 95

Glu Leu Ala Asn Tyr Asp Leu Lys Leu Trp Ser Gln Asn Lys Lys Ser  
100 105 110

Leu Ile Arg Asp Trp Gly Glu Ala Val Phe Asp Ile Phe Asp Lys Asp  
115 120 125

Gly Ser Gly Ser Ile Ser Leu Asp Glu Trp Lys Ala Tyr Gly Arg Ile  
130 135 140

Ser Gly Ile Cys Ser Ser Asp Glu Asp Ala Glu Lys Thr Phe Lys His  
145 150 155 160

Cys Asp Leu Asp Asn Ser Gly Lys Leu Asp Val Asp Glu Met Thr Arg  
165 170 175

Gln His Leu Gly Phe Trp Tyr Thr Leu Asp Pro Asn Ala Asp Gly Leu  
180 185 190

Tyr Gly Asn Phe Val Pro  
195

<210> 3

<211> 198

<212> PRT

<213> Unknown

<220>

<223> Clytin mutant: mutClyK4

<400> 3

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1 5 10 15

Asp Asn Pro Lys Trp Val Asn Arg His Lys Phe Met Phe Asn Phe Leu  
20 25 30

Asp Ile Asn Gly Asp Gly Lys Ile Thr Leu Asp Glu Ile Val Ser Lys  
35 40 45

Ala Ser Asp Asp Ile Cys Ala Lys Leu Gly Ala Thr Pro Glu Gln Thr  
50 55 60

Lys Arg His Gln Asp Ala Val Glu Ala Phe Phe Lys Lys Ile Gly Met  
65 70 75 80

Asp Tyr Gly Lys Glu Val Glu Phe Pro Ala Phe Val Asp Gly Trp Lys  
85 90 95

Glu Leu Ala Asn Tyr Asp Leu Lys Leu Trp Ser Gln Asn Lys Lys Ser  
100 105 110

Leu Ile Arg Asp Trp Gly Glu Ala Val Phe Asp Ile Phe Asp Lys Asp  
115 120 125

Gly Ser Gly Cys Ile Ser Leu Asp Glu Trp Lys Ala Tyr Gly Arg Ile  
130 135 140

Ser Gly Ile Cys Ser Ser Asp Glu Asp Ala Glu Lys Thr Phe Lys His  
145 150 155 160

Cys Asp Leu Asp Asn Ser Gly Lys Leu Asp Val Asp Glu Met Thr Arg  
165 170 175

Gln His Leu Gly Phe Trp Tyr Thr Leu Asp Pro Asn Ala Asp Gly Leu  
180 185 190

Tyr Gly Asn Phe Val Pro  
195

<210> 4

<211> 198

<212> PRT

<213> Unknown

<220>

<223> Clytin mutant: 1F10 mutant

<400> 4

Met Ala Asp Thr Ala Ser Lys Tyr Ala Val Lys Leu Arg Pro Asn Phe  
1 5 10 15

Asp Asn Pro Lys Trp Val Asn Arg His Lys Phe Met Phe Asn Phe Leu  
20 25 30

Asp Ile Asn Gly Asp Gly Lys Ile Thr Leu Asp Glu Ile Val Ser Arg  
35 40 45

Ala Ser Asp Asp Ile Cys Ala Lys Leu Gly Ala Thr Pro Glu Gln Thr  
50 55 60

Lys Arg His Gln Asp Ala Val Glu Ala Phe Phe Lys Lys Ile Gly Met  
65 70 75 80

Asp Tyr Gly Lys Glu Val Glu Phe Pro Ala Phe Val Asp Gly Trp Lys  
85 90 95

Glu Leu Ala Asn Tyr Asp Leu Lys Leu Trp Ser Gln Asn Lys Lys Ser  
100 105 110

Leu Ile Arg Asp Trp Gly Glu Ala Val Phe Asp Ile Phe Asp Lys Asp  
115 120 125

Gly Ser Gly Ser Ile Ser Leu Asp Glu Trp Lys Ala Tyr Gly Arg Ile  
130 135 140

Ser Gly Ile Cys Ser Ser Asp Glu Asp Ala Glu Lys Thr Phe Lys His  
145 150 155 160

Cys Asp Leu Asp Asn Ser Gly Lys Leu Asp Val Asp Glu Met Thr Arg  
165 170 175

Gln His Leu Gly Phe Trp Tyr Thr Leu Asp Pro Asn Ala Asp Gly Leu  
180 185 190

Tyr Gly Asp Phe Val Pro  
195

<210> 5

<211> 198

<212> PRT

<213> Unknown

<220>

<223> Clytin mutant: 1H7 mutant

<400> 5

Met Ala Asp Thr Ala Ser Lys Tyr Ala Val Lys Leu Arg Pro Asn Phe  
1 5 10 15

Asp Asn Pro Lys Trp Val Asn Arg His Lys Phe Met Phe Asn Phe Leu  
20 25 30

Asp Ile Asn Gly Asp Gly Lys Ile Thr Leu Asp Glu Ile Val Ser Lys  
35 40 45

Ala Ser Asp Asp Ile Cys Ala Lys Leu Gly Ala Thr Pro Glu Gln Thr  
50 55 60

Lys Arg His Arg Asp Ala Val Glu Ala Phe Phe Lys Lys Ile Gly Met  
65 70 75 80

Asp Tyr Gly Lys Glu Val Glu Phe Pro Val Phe Val Asp Gly Trp Lys  
85 90 95

Glu Leu Ala Asn Tyr Asp Leu Lys Leu Trp Ser Gln Asn Lys Lys Ser  
100 105 110

Leu Ile Arg Asp Trp Gly Glu Ala Val Phe Asp Ile Phe Asp Lys Asp  
115 120 125

Gly Ser Gly Ser Ile Ser Leu Asp Glu Trp Lys Ala Tyr Gly Arg Ile  
130 135 140

Ser Gly Ile Cys Ser Ser Asp Glu Asp Ala Glu Lys Thr Phe Lys His  
145 150 155 160

Cys Asp Leu Asp Asn Ser Gly Lys Leu Asp Val Asp Glu Met Thr Arg  
165 170 175

Gln His Leu Gly Phe Trp Tyr Ile Leu Asp Pro Asn Ala Asp Gly Leu  
180 185 190

Tyr Gly Asn Phe Val Pro  
195

<210> 6

<211> 198

<212> PRT

<213> Unknown

<220>

<223> Clytin mutant: 1C12 mutant

<400> 6

Met Ala Asp Thr Ala Ser Lys Tyr Ala Val Lys Leu Arg Pro Asn Phe  
1 5 10 15

Asp Asn Pro Lys Trp Val Asn Arg His Lys Phe Met Phe Asn Phe Leu  
20 25 30

Asp Ile Asn Gly Asp Gly Lys Ile Thr Leu Asp Glu Ile Val Ser Lys  
35 40 45

Ala Ser Asp Asp Ile Cys Ala Lys Leu Gly Ala Thr Pro Glu Gln Thr  
50 55 60

Lys Arg His Gln Asp Ala Val Glu Ala Phe Phe Lys Lys Ile Gly Met  
65 70 75 80

Asp Phe Gly Lys Glu Val Glu Phe Pro Ala Phe Val Asp Gly Trp Lys  
85 90 95

Glu Leu Ala Asn Tyr Asp Leu Lys Leu Trp Ser Gln Asn Asn Lys Ser  
100 105 110

Leu Ile Arg Asp Trp Gly Glu Ala Val Phe Asp Ile Leu Asp Lys Asp  
115 120 125

Gly Ser Gly Ser Ile Ser Leu Asp Glu Trp Lys Ala Tyr Gly Arg Ile  
130 135 140

Ser Gly Ile Cys Arg Ser Asp Glu Asp Ala Glu Lys Thr Phe Lys His  
145 150 155 160

Cys Asp Leu Asp Asn Ser Gly Lys Leu Asp Val Asp Glu Met Thr Arg  
165 170 175

Gln His Leu Gly Phe Trp Tyr Thr Leu Asp Pro Asn Ala Asp Gly Leu  
180 185 190

Tyr Gly Asn Phe Val Pro  
195

<210> 7

<211> 198

<212> PRT

<213> Unknown

<220>

<223> Clytin mutant: 25N03b mutant

<400> 7

Met Ala Asp Thr Ala Ser Lys Tyr Ala Val Lys Leu Arg Pro Asn Phe  
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Asp Asn Pro Lys Trp Val Asn Arg His Lys Phe Met Phe Asn Phe Leu  
20 25 30

Asp Ile Asn Gly Asp Gly Lys Ile Thr Leu Asp Glu Ile Val Ser Lys  
35 40 45

Ala Ser Asp Asp Ile Cys Ala Lys Leu Gly Ala Thr Pro Glu Gln Thr  
50 55 60

Lys Arg His Gln Asp Ala Val Glu Ala Phe Phe Lys Lys Ile Gly Met  
65 70 75 80

Asp Tyr Gly Lys Glu Val Glu Phe Pro Ala Phe Val Asp Gly Trp Lys  
85 90 95

Glu Leu Ala Asn Tyr Asp Leu Lys Leu Trp Ser Gln Asn Lys Lys Ser  
100 105 110

Leu Ile Arg Asp Trp Gly Glu Ala Val Phe Asp Ile Phe Asp Lys Asp  
115 120 125

Gly Ser Gly Ser Ile Ser Leu Asp Glu Trp Lys Ala Tyr Cys Arg Ile  
130 135 140

Ser Gly Ile Cys Ser Ser Asp Glu Asp Ala Glu Lys Thr Phe Lys His  
145 150 155 160

Cys Asp Leu Asp Asn Ser Gly Lys Leu Asp Val Asp Glu Met Thr Arg  
165 170 175

Gln His Leu Gly Phe Trp Tyr Thr Leu Asp Pro Asn Ala Asp Gly Leu  
180 185 190

Tyr Gly Asn Phe Val Pro  
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<210> 8

<211> 198

<212> PRT

<213> Unknown

<220>

<223> Clytin mutant: 3C12 mutant

&lt;400&gt; 8

Met Ala Asp Thr Ala Ser Lys Tyr Ala Val Lys Leu Arg Pro Asn Phe  
1 5 10 15

Asp Asn Pro Lys Trp Val Asn Arg His Lys Phe Met Phe Asn Phe Leu  
20 25 30

Asp Ile Asn Gly Asp Gly Lys Ile Thr Leu Asp Glu Ile Val Ser Lys  
35 40 45

Ala Ser Asp Asp Val Cys Ala Lys Leu Gly Ala Thr Pro Glu Gln Thr  
50 55 60

Lys Arg His Gln Asp Ala Val Glu Ala Phe Phe Lys Lys Ile Gly Met  
65 70 75 80

Asp Tyr Gly Lys Glu Val Glu Phe Pro Ala Phe Val Asp Gly Trp Lys  
85 90 95

Glu Leu Ala Asn Tyr Asp Leu Lys Leu Trp Ser Gln Asn Lys Lys Ser  
100 105 110

Leu Ile Arg Asp Trp Gly Glu Ala Val Phe Asp Ile Phe Asp Lys Asp  
115 120 125

Gly Ser Gly Ser Ile Ser Leu Asp Glu Trp Lys Ala Tyr Gly Arg Ile  
130 135 140

Ser Gly Ile Cys Arg Ser Asp Glu Asp Ala Glu Lys Thr Phe Lys His  
145 150 155 160

Cys Asp Leu Asp Asn Ser Gly Lys Leu Asp Val Asp Glu Met Thr Arg  
165 170 175

Gln His Leu Gly Phe Trp Tyr Thr Leu Asp Pro Asn Ala Asp Gly Leu  
180 185 190

Tyr Gly Asn Phe Val Pro  
195

&lt;210&gt; 9

&lt;211&gt; 198

&lt;212&gt; PRT

&lt;213&gt; Unknown

&lt;220&gt;

&lt;223&gt; Clytin mutant: 6H22 mutant

&lt;400&gt; 9

Met Ala Asp Thr Ala Ser Lys Tyr Ala Val Lys Leu Arg Pro Asn Phe  
1 5 10 15

Asp Asp Pro Lys Trp Val Asn Arg His Lys Phe Met Phe Asn Phe Leu  
20 25 30

Asp Ile Asn Gly Asp Gly Lys Val Thr Leu Asp Glu Ile Val Ser Lys  
35 40 45

Ala Ser Asp Asp Ile Cys Ala Arg Leu Gly Ala Thr Pro Glu Gln Thr  
50 55 60

Lys Arg His Gln Asp Ala Val Glu Ala Phe Phe Lys Lys Ile Gly Met  
65 70 75 80

Asp Tyr Gly Lys Glu Val Glu Phe Pro Ala Phe Val Asp Gly Trp Lys  
85 90 95

Glu Leu Ala Asn Tyr Asp Leu Lys Leu Trp Ser Gln Asn Lys Lys Ser  
100 105 110

Leu Ile Arg Asp Trp Gly Glu Ala Val Phe Asp Ile Phe Asp Lys Asp  
115 120 125

Gly Ser Gly Ser Ile Ser Leu Asp Glu Trp Lys Ala Tyr Gly Arg Ile  
130 135 140

Ser Gly Ile Cys Ser Ser Asp Glu Asp Ala Glu Lys Thr Phe Lys His  
145 150 155 160

Cys Asp Leu Asp Asn Ser Gly Lys Leu Asp Val Asp Glu Met Thr Arg  
165 170 175

Gln His Leu Gly Phe Trp Tyr Thr Leu Asp Pro Asn Ala Asp Gly Leu  
180 185 190

Tyr Gly Asn Phe Val Pro  
195

&lt;210&gt; 10

&lt;211&gt; 198

&lt;212&gt; PRT

&lt;213&gt; Unknown

&lt;220&gt;

&lt;223&gt; Clytin mutant: 12mutCly

&lt;400&gt; 10

Met Ala Asp Thr Ala Ser Lys Tyr Ala Val Lys Leu Arg Pro Asn Phe  
1 5 10 15

Asp Asn Pro Lys Trp Val Asn Arg His Lys Phe Met Phe Asn Phe Leu  
20 25 30

Asp Ile Asn Gly Asp Gly Lys Ile Thr Leu Asp Glu Ile Val Ser Lys  
35 40 45

Ala Ser Asp Asp Ile Cys Ala Lys Leu Glu Ala Thr Pro Glu Gln Thr  
50 55 60

Lys Arg His Gln Val Cys Val Glu Ala Phe Phe Arg Gly Cys Gly Met  
65 70 75 80

Glu Tyr Gly Lys Glu Ile Ala Phe Pro Gln Phe Leu Asp Gly Trp Lys  
85 90 95

Gln Leu Ala Thr Ser Glu Leu Lys Lys Trp Ala Arg Asn Glu Pro Thr  
100 105 110

Leu Ile Arg Glu Trp Gly Asp Ala Val Phe Asp Ile Phe Asp Lys Asp  
115 120 125

Gly Ser Gly Ser Ile Ser Leu Asp Glu Trp Lys Ala Tyr Gly Arg Ile  
130 135 140

Ser Gly Ile Cys Ser Ser Asp Glu Asp Ala Glu Lys Thr Phe Lys His  
145 150 155 160

Cys Asp Leu Asp Asn Ser Gly Lys Leu Asp Val Asp Glu Met Thr Arg  
165 170 175

Gln His Leu Gly Phe Trp Tyr Thr Leu Asp Pro Asn Ala Asp Gly Leu  
180 185 190

Tyr Gly Asn Phe Val Pro  
195

<210> 11

<211> 600

<212> DNA

<213> Unknown

<220>

<223> Clytin mutant: mutClyK1\_dna

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accctggacg	agatcgtgag	caaggccagc	gacgacatct	gcgccaagct	gggcgccacc	180
cccgagcaga	ccaagagaca	ccaggacgcc	gtggaggcct	tcttcaagaa	gatcggcatg	240
gactacggca	aggaggtgga	gttcccccgc	ttcgtggacg	gctggaagga	gctggccaac	300
taccacctga	agctgtggag	ccagaacaag	aagagcctca	tcagggactg	gggcgaggcc	360
gtgttcgaca	tcttcgacaa	ggacggcagc	ggctgcata	gcctggatga	gtggaaggcc	420
tacggcagaa	tcagcggcat	ctgcagcagc	gacgaggacg	ccgaaaagac	cttcaagcac	480
tgcgacctgg	acaacagcgg	caagctggac	gtggacgaga	tgaccagaca	gcacctggac	540
ttctggtaca	ccctggaccc	caatgccgac	ggcctgtacg	gcaacttcgt	gccttgataa	600

<210> 12

<211> 600

<212> DNA

<213> Unknown

<220>

<223> Clytin mutant: mutClyK4\_dna

<400> 12

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tgggtgaacc	ggcacaagg	ttcgttcaac	ttcctggaca	tcaacggcga	cggcaagatc	120
accctggacg	agatcgtgag	caaggccagc	gacgacatct	gcgccaagct	gggcgccacc	180
cccgagcaga	ccaagagaca	ccaggacgcc	gtggaggcct	tcttcaagaa	gatcggcatg	240
gactacggca	aggaggtgga	gttcccccgc	ttcgtggacg	gctggaagga	gctggccaac	300
tacgacctga	agctgtggag	ccagaacaag	aagagcctca	tcagggactg	gggcgaggcc	360

13

gtgttcgaca tcttcgacaa ggacggcagc ggctgcata gcctggatga gtggaaggcc 420  
tacggcagaa tcagcggcat ctgcagcagc gacgaggacg ccgaaaagac cttcaagcac 480  
tgcgacctgg acaacagcgg caagctggac gtggacgaga tgaccagaca gcacctggc 540  
ttctggtaca ccctggaccc caatgccgac ggcctgtacg gcaacttcgt gccttgataa 600

&lt;210&gt; 13

&lt;211&gt; 600

&lt;212&gt; DNA

&lt;213&gt; Unknown

&lt;220&gt;

&lt;223&gt; Clytin mutant: 1F10 mutant\_dna

&lt;400&gt; 13

atggccgaca ccgccagcaa gtacgccgtg aagctgaggc ccaacttcga caaccccaag 60  
tgggtgaacc ggcacaagtt catgttcaac ttcctggaca tcaacggcga cggcaagatc 120  
accctggacg agatcgtgag cagggccagc gacgacatct gcgccaaagct gggcgccacc 180  
cccgagcaga ccaagagaca ccaggacgcc gtggaggcct tcttcaagaa gatcgccatg 240  
gactacggca aggaggtgga gttcccccgc ttcgtggacg gctggaaagga gctggccaac 300  
tacgacctga agctgtggag ccagaacaag aagagcctca tcagggactg gggcgaggcc 360  
gtgttcgaca tcttcgacaa ggacggcagc ggcagcatca gcctggatga gtggaaggcc 420  
tacggcagaa tcagcggcat ctgcagcagc gacgaggacg ccgaaaagac cttcaagcac 480  
tgcgacctgg acaacagcgg caagctggac gtggacgaga tgaccagaca gcacctggc 540  
ttctggtaca ccctggaccc caacgccgac ggcctgtacg gcgacttcgt gccttgataa 600

&lt;210&gt; 14

&lt;211&gt; 600

&lt;212&gt; DNA

&lt;213&gt; Unknown

&lt;220&gt;

&lt;223&gt; Clytin mutant: 1H7 mutant\_dna

&lt;400&gt; 14

atggccgaca ccgccagcaa gtacgccgtg aagctgaggc ccaacttcga caaccccaag 60

tgggtgaacc ggcacaagtt catgttcaat ttccctggaca tcaacggcga cggcaagatc 120  
accctggacg agatcgtgag caaggccagc gacgacatct gcgccaaagct gggcgccacc 180  
cccgagcaga ccaagagaca ccgggacgccc gtggaggcct tcttcaagaa gatcggcatg 240  
gactacggca aggaggtgga gttccccgtc ttctgtggacg gctggaagga gctggccaac 300  
tacgacctga agctgtggag ccagaacaag aagagcctca tcagggactg gggcgaggcc 360  
gtgtttgaca tcttcgacaa ggacggcagc ggcagcatta gcctggatga gtggaaggcc 420  
tacggtagaa tcagcggcat ctgcagcagc gacgaggacg ccgaaaagac cttcaagcac 480  
tgcgacctgg acaacagcgg caagctggac gtggacgaga tgaccagaca gcacctgggc 540  
ttctggtaca tcctggaccc caacgcccac ggcctgtacg gcaacttcgt gccttgataa 600

<210> 15

<211> 600

<212> DNA

<213> Unknown

<220>

<223> Clytin mutant: 1C12 mutant\_dna

<400> 15

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tgggtgaacc ggcacaagtt catgttcaac ttccctggaca tcaacggcga cggcaagatc 120  
accctggacg agatcgtgag caaggccagc gacgacatct gcgccaaagct gggcgccacc 180  
cccgagcaga ccaagagaca ccaggacgccc gtggaggcct tcttcaagaa gatcggcatg 240  
gacttcggca aggaggtgga gttccccgtc ttctgtggacg gctggaagga gctggccaac 300  
tacgacctga agctgtggag ccagaacaat aagagcctca tcagggactg gggcgaggcc 360  
gtgttcgaca tcctcgacaa ggacggcagc ggcagcatta gcctggatga gtggaaggcc 420  
tacggcagaa tcagcggcat ctgcagaagc gacgaggacg ccgaaaagac cttcaagcac 480  
tgcgacctgg acaacagcgg caagctggac gtggacgaga tgaccagaca gcacctgggc 540  
ttctggtaca ccctggaccc caacgcccac ggcctgtacg gcaacttcgt gccttgataa 600

<210> 16

<211> 600

<212> DNA

&lt;213&gt; Unknown

&lt;220&gt;

&lt;223&gt; Clytin mutant: 25N03b mutant\_dna

&lt;400&gt; 16

atggccgaca	ccgcccagcaa	gtacgcccgtg	aagctgaggc	ccaacttcga	caaccccaag	60
tgggtgaacc	ggcacaagtt	catgttcaac	ttcctggaca	tcaacggcga	cggcaagatc	120
accctggacg	agatcgtgag	caaggccagc	gacgacatct	gcgccaagct	gggcgccacc	180
cccgagcaga	ccaagagaca	ccaggacgcc	gtggaggcct	tcttcaagaa	gatcgccatg	240
gactacggca	aggaggtgga	gttccccgcc	ttcgtggacg	gctggaagga	gctggccaac	300
tacgacctga	agctgtggag	ccagaacaag	aagagcctca	tcagggactg	gggcgaggcc	360
gtgttcgaca	tcttcgacaa	ggacggcagc	ggcagcatca	gcctggatga	gtggaaggcc	420
tactgcagaa	tcagcggcat	ctgcagcagc	gacgaggacg	ccgaaaagac	cttcaagcac	480
tgcgacctgg	acaacagcgg	caagctggac	gtggacgaga	tgaccagaca	gcacctggc	540
ttctggtaca	ccctggaccc	caacgcccac	ggcctgtacg	gcaacttcgt	gccttgataa	600

&lt;210&gt; 17

:

&lt;211&gt; 600

&lt;212&gt; DNA

&lt;213&gt; Unknown

&lt;220&gt;

&lt;223&gt; Clytin mutant: 3C12 mutant\_dna

&lt;400&gt; 17

atggccgaca	ccgcccagcaa	gtacgcccgtg	aagctgaggc	ccaacttcga	caaccccaag	60
tgggtgaacc	ggcacaagtt	catgttcaac	ttcctggaca	tcaacggcga	cggcaagatc	120
accctggacg	agatcgtgag	caaggccagc	gacgacgtct	gcgccaagct	gggcgccacc	180
cccgagcaga	ccaagagaca	ccaggacgcc	gtggaggcct	tcttcaagaa	gatcgccatg	240
gactacggca	aggaggtgga	gttccccgcc	ttcgtggacg	gctggaagga	gctggccaac	300
tacgacctga	agctgtggag	ccaaaacaag	aagagcctca	tcagggactg	gggcgaggcc	360
gtgttcgaca	tcttcgacaa	ggacggcagc	ggcagcatca	gcctggacga	gtggaaggcc	420
tacggcagaa	tcagcggcat	ctgcagaagc	gacgaggacg	ccgaaaagac	cttcaagcac	480

tgcgacctgg acaaacagcggttggacgtggacgaga tgaccagaca gcacctggc 540

ttctggtaca ccctggaccc caacgcccac ggcctgtacg gcaacttcgt gccttgataa 600

<210> 18

<211> 600

<212> DNA

<213> Unknown

<220>

<223> Clytin mutant: 6H22 mutant\_dna

<400> 18

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tgggtgaacc ggcacaagtt catgttcaac ttcctggaca tcaacggcga cggcaaggtc 120

accctggacg agatcgtgag caaggccagc gacgacatct ggcgcaggct gggcgccacc 180

cccgagcaga ccaagagaca ccaggacgac gtggaggcct tcttcaagaa gatcgccatg 240

gactacggca aagaggtgga gttcccgcc ttcgtggacg gctggaagga gctggccaac 300

tacgacctga agctgtggag ccagaacaag aagagcctca tcagggactg gggcgaggcc 360

gtgttcgaca tcttcgacaa ggacggcagc ggcagcatca gcctggatga gtggaaggcc 420

tacggcagaa tcagcggcat ctgcagcagc gacgaggacg ccgaaaagac cttcaagcac 480

tgcgacctgg acaaacagcggttggacgtggacgaga tgaccagaca gcacctggc 540

ttctggtaca ccctggaccc caacgcccac ggcctgtacg gcaacttcgt gccttgataa 600

<210> 19

<211> 597

<212> DNA

<213> Unknown

<220>

<223> Clytin mutant: 12mutCly\_dna

<400> 19

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tgggtgaacc ggcacaagtt catgttcaac ttcctggaca tcaacggcga cggcaagatc 120

accctggacg agatcgtgag caaggccagc gacgacatct gcgccaaagct ggaggccacc 180  
cccgagcaga ccaagcggca ccaagtgtgc gtggaggcct tcttccgcgg ctgcggcatg 240  
gagtagggca aggagatcgc cttcccccag ttcctggacg gctggaagca gctggccaca 300  
agcgagctga agaagtggc ccggaacgag cccaccctga tccgcgagtg gggcgacgccc 360  
gtgttcgaca tcttcgacaa ggacggcagc ggcagcatct ctctggacga gtggaaggcc 420  
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tgcgacctgg acaacagcgg caagctggac gtggacgaga tgaccggca gcacacctggc 540  
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<213> Unknown

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&lt;400&gt; 22

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33

&lt;210&gt; 23

&lt;211&gt; 27

&lt;212&gt; DNA

&lt;213&gt; Unknown

&lt;220&gt;

&lt;223&gt; synthetic primer

&lt;400&gt; 23

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27

&lt;210&gt; 24

&lt;211&gt; 99

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 24

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60

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99